

ABSTRACT

Methods related to formation of a gate electrode are disclosed that employ a conductive hard mask as a protective layer during a photoresist removal process. In preferred embodiments, the conductive hard mask includes a metal containing conductor or a metal silicide. The invention prevents process damage on the gate dielectric during wet and/or dry resist strip, and since the conductive hard mask cannot be etched in typical resist strip chemistries, the invention also protects a metal electrode under the hard mask. The steps disclosed allow creation of a multiple work function metal gate electrode, or a mixed metal and polysilicon gate electrode, which do not suffer from the problems of the related art.